

Trend Study 14-24-99

Study site name: Ruin Park.

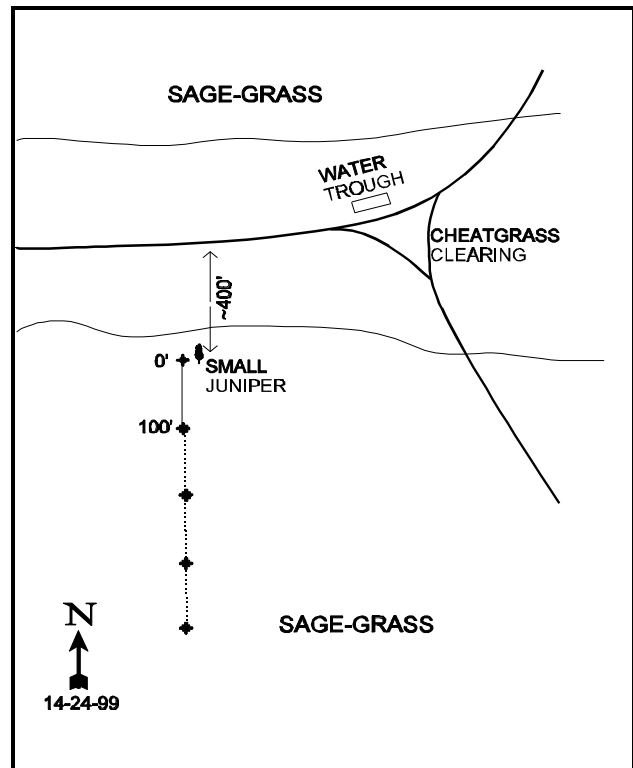
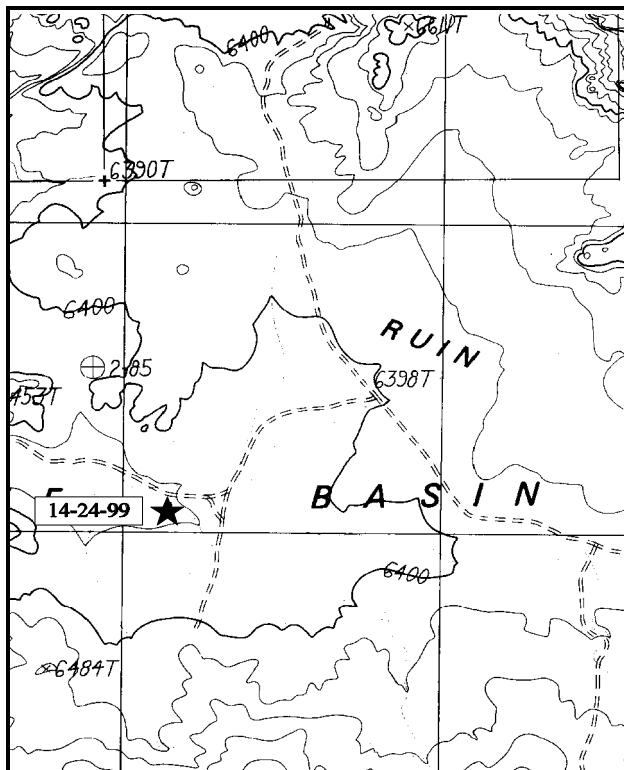
Range type: Big Sagebrush-Grass .

Compass bearing: frequency baseline 165°M.

Footmark (first frame at) 5 feet, footmarks (frequency belts) line 1 (11 & 71ft), line 2 (34ft), line 3 (59ft), line 4 (95ft).

LOCATION DESCRIPTION

At the junction of the Elk Ridge-Salt Creek Mesa-Beef Basin Roads, go north down into the Beef Basin area. Follow the main road for 6.4 miles, passing the FS/BLM boundary, down to an intersection where there is a BLM register box. Bear right and go 3.7 miles on the main road disregarding all forks until you come to a fork at this mileage. Stay left and continue 0.3 miles to a right turnoff to a ruin. Continue left 0.1 miles to a water trough by a fork. Turn right for approximately 0.05 miles before turning south and driving southwest across the cheatgrass flat (no road). Stop at the sagebrush border and look out in the sagebrush flat for a small lone juniper near a shallow gully. The frequency baseline starts by this juniper and runs south towards the P-J covered hills. All stakes are 3 1/2 foot tall green steel fence posts.



Map Name: Cross Canyon

Diagrammatic Sketch

Township 32S , Range 18E , Section 11

UTM 4206935.132 N, 595157.578 E

DISCUSSION

Trend Study No. 14-24 (36-12)

The Ruin Park trend study samples the typical Wyoming big sagebrush-grass range in Beef Basin. The site consists of a large open park surrounded by rocky, pinyon-juniper covered hills. Numerous Anasazi Indian ruins are found in the hills near the study, therefore the name Ruin Park for the large open flat. Located in the lower, western end of the park, the study site has a generally northern aspect and drainage to the intermittent gully running west down the center of Ruin Park. A new water development for cattle is located just northeast of the transect, in an area dominated by cheatgrass and a few Atriplex. Ruin Park is grazed under the same schedule as the previous study. Cattle distribution is controlled mainly by water and there are few fences. Deer use is moderately heavy in this part of Beef Basin. Pellet groups and antler drops were numerous in 1986. Pellet group data from the site in 1999 estimate 70 deer days use/acre (173 ddu/ha) and 26 cow days use/acre (64 cdu/ha). Deer pellet groups appear to be from the previous winter. Cattle pats were mostly older, but a few were from this spring.

The reddish sandy loam soil is fairly deep with an effective rooting depth estimated at 18 inches. It has a moderately alkaline pH (7.9) with low organic matter (0.6%) and phosphorus (5.9 ppm). Phosphorus values of 10 ppm are considered minimal for normal plant growth and development. Due to the sandy nature of the soil, average soil temperature is high at 76°F at an depth of 18 inches. High soil temperatures would tend to give winter annuals like cheatgrass, a competitive advantage over perennial grasses, especially during dry years with unusually dry summers. About 50% of the soil was bare in 1986, due to the patchy distribution of the vegetative cover. Percent bare ground has declined to 34% in 1992 and 1999, this would mostly be due to the increase in cheatgrass cover. A buildup of litter and soil, along with some cryptogamic development, is found at the base of the sagebrush. A gully runs parallel to the baseline, and has grass growing in the bottom. Overall, erosion is not severe, although there is soil movement and deposition from the hills above.

Wyoming big sagebrush is the dominant plant and key browse species in Ruin Park. The plants are severely hedged with 58% being classified as decadent in 1986. Percent decadence increased substantially to 77% in 1992. This trend is continuing with further increases to 91% in 1999. Protected plants show better growth and vigor. There were few young plants and no seedlings encountered during any reading. Estimated density on the study site was 2,198 sagebrush/acre in 1986, declining to 1,520 by 1992. Density declined further in 1999 to only 640 plants/acre. Dead plants, first counted in 1999, are twice as numerous as live plants. A large, very woody winterfat ecotype is found on this site which was fairly common in 1986 and 1992. In 1999, only 300 mostly heavily hedged plants/acre were estimated. Narrowleaf low rabbitbrush is fairly common and appears to be slowly increasing.

Perennial grasses provide important ground cover and soil protection. The most abundant perennial species is needle-and-thread grass which shows the influence of heavy cattle grazing. Blue grama and Indian ricegrass are also common. Cheatgrass occurred on the site in 1992 in small numbers. By 1999 its abundance had exploded to where it now dominates the site by providing 69% of the grass cover and 61% of the total vegetation cover. Although several species of forbs were encountered on the transect most species are rare in their occurrence. Forage production is limited, but the forbs provide some early spring green forage.

1986 APPARENT TREND ASSESSMENT

This sagebrush flat, as does most all of Beef Basin, receives heavy late fall, winter, and spring use by cattle and mostly winter use by deer. As a consequence, the Wyoming big sagebrush is deteriorating in form, vigor, and recruitment. Forage production has also suffered. Because of the poor site potential and grazing pressure, grasses have not really had the opportunity to responded. Continued persistent use could eliminate the key browse species. A reduction in use, through better distribution and lower animal numbers, seems to be the only feasible answer. Current vegetative trend is obviously down. Soil is lost from wind and water much faster than it is created, therefore, soil trend is also down.

1992 TREND ASSESSMENT

The soil trend for this site is stable, but in only fair to poor condition. Percent cover for bare ground has declined, but so has litter cover. Trend for browse is down due to reduced population density, continued moderate to heavy use, poor vigor, and an increase in percent decadence for Wyoming big sagebrush. Recruitment is also poor with no seedlings and few young plants sampled. Population density for winterfat has also declined slightly, although percent decadence has actually gone down from 54% in 1986 to 4% now with no plants classified with poor vigor. The overall trend for browse would be considered downward. Winterfat, which is a warm season species, is escaping harmful utilization because most of the use is during the cool season (winter and spring) when it is not actively growing. The herbaceous understory is made up mostly of grasses (87% of the herbaceous cover), while forbs are only a minor component of the herbaceous understory. With this in mind, the trend for the herbaceous understory is stable, but only fair condition.

TREND ASSESSMENT

soil - stable, but only fair to poor condition

browse - downward

herbaceous understory - stable

1999 TREND ASSESSMENT

Trend for soil is stable with similar ground cover characteristics compared to 1992. Some erosion is occurring, but it appears minimal due to the levelness of the terrain. Trend for browse continues to decline with density of Wyoming big sagebrush now at only 640 plants/acre and percent decadence up to 91%. In addition, dead plants are twice as abundant as live plants and 41% of the decadent plants sampled appeared to be dying. With no noticeable recruitment, the population will continue to decline. Density of winterfat has also declined from 1,040 to only 300 plants/acre. Trend for the herbaceous understory is also down. Sum of nested frequency of perennial grasses has declined and annual cheatgrass has increased significantly. Cheatgrass had a cover value of only .04% in 1992, increasing to 21% by 1999. Quadrat frequency rose from only 3% in 1992 to 97% in 1999. Cheatgrass now totally dominates the site by providing 61% of the total vegetative cover. Forbs are lacking and have also declined in nested frequency since the last reading. Cover of forbs has decreased from 4% in 1992 to less than 1% in 1999.

TREND ASSESSMENT

soil - stable, but poor condition

browse - downward

herbaceous understory - down and dominated by cheatgrass

HERBACEOUS TRENDS --
Herd unit 14 , Study no: 24

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'86	'92	'99	'86	'92	'99	'92	'99
G	<i>Bouteloua gracilis</i>	_a 95	_b 146	_a 58	33	49	25	9.26	.80
G	<i>Bromus tectorum</i> (a)	-	_a 5	_b 336	-	3	97	.04	21.28
G	<i>Oryzopsis hymenoides</i>	_a 56	_a 61	_b 96	27	30	42	1.40	2.20
G	<i>Sitanion hystrix</i>	_b 47	_a 11	_a 3	22	4	1	.07	.00
G	<i>Sporobolus cryptandrus</i>	_{ab} 10	_b 12	_a 1	5	6	1	.15	.00
G	<i>Stipa comata</i>	_b 278	_b 262	_a 176	92	94	76	16.82	6.71
G	<i>Vulpia octoflora</i> (a)	-	9	5	-	4	3	.02	.01
Total for Annual Grasses		0	14	341	0	7	100	0.05	21.30
Total for Perennial Grasses		486	492	334	179	183	145	27.72	9.74
Total for Grasses		486	506	675	179	190	245	27.78	31.04
F	<i>Astragalus mollissimus</i>	7	8	6	5	3	4	.04	.02
F	<i>Chenopodium leptophyllum</i> (a)	_b 8	_c 68	_a -	3	31	-	1.44	-
F	<i>Eriogonum</i> spp.	-	2	-	-	1	-	.03	-
F	<i>Erigeron pumilus</i>	4	7	2	2	3	1	.06	.00
F	<i>Euphorbia fendleri</i>	11	3	10	5	2	4	.06	.24
F	<i>Helianthus annuus</i> (a)	-	2	-	-	1	-	.00	-
F	<i>Lappula occidentalis</i> (a)	-	_a -	_b 6	-	-	3	-	.06
F	<i>Machaeranthera canescens</i>	_a 4	_b 40	_a 7	2	19	3	1.79	.02
F	<i>Microsteris gracilis</i> (a)	-	-	1	-	-	1	-	.00
F	<i>Penstemon</i> spp.	-	1	-	-	1	-	.03	-
F	<i>Phlox hoodii</i>	_a 3	_{ab} 20	_b 14	2	8	7	.17	.28
F	<i>Phlox longifolia</i>	_b 32	_b 23	_a 2	17	10	1	.10	.00
F	<i>Plantago patagonica</i> (a)	-	-	28	-	-	12	-	.06
F	<i>Ranunculus testiculatus</i> (a)	-	-	3	-	-	1	-	.00
F	<i>Salsola iberica</i> (a)	-	3	-	-	2	-	.15	-
F	<i>Senecio multilobatus</i>	4	-	-	2	-	-	-	-
F	<i>Sphaeralcea coccinea</i>	_b 15	_a 2	_a -	8	2	-	.16	-
F	<i>Tragopogon dubius</i>	-	-	2	-	-	1	-	.00
F	Unknown forb-annual (a)	-	2	-	-	2	-	.01	-
Total for Annual Forbs		8	75	38	3	36	17	1.61	0.13
Total for Perennial Forbs		80	106	43	43	49	21	2.45	0.57
Total for Forbs		88	181	81	46	85	38	4.06	0.71

Values with different subscript letters are significantly different at $\alpha = 0.10$

BROWSE TRENDS --
Herd unit 14 , Study no: 24

Type	Species	Strip Frequency		Average Cover %	
		'02	'09	'02	'09
B	Artemisia frigida	4	2	.03	-
B	Artemisia tridentata wyomingensis	43	23	4.15	1.77
B	Ceratoides lanata	13	8	.51	.18
B	Chrysothamnus nauseosus albicaulis	1	1	-	-
B	Chrysothamnus viscidiflorus stenophyllus	25	28	1.24	1.43
B	Opuntia spp.	1	0	-	-
B	Sclerocactus	0	0	-	-
Total for Browse		87	62	5.93	3.39

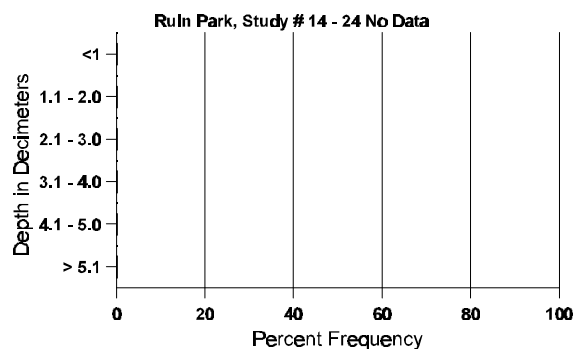
BASIC COVER --
Herd unit 14 , Study no: 24

Cover Type	Nested Frequency		Average Cover %		
	'02	'09	'86	'92	'99
Vegetation	328	351	6.50	36.31	36.66
Rock	-	-	0	.83	0
Pavement	8	75	0	0	.30
Litter	274	375	41.00	22.78	34.33
Cryptogams	20	22	2.50	.55	.24
Bare Ground	265	316	50.00	33.97	34.17

SOIL ANALYSIS DATA --
Herd Unit 14, Study # 24, Study Name: Ruin Park

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	dS/m
18.1	76.0 (18.1)	7.9	60.0	21.8	16.6	0.6	5.9	80.0	0.4

Stoniness Index



PELLET GROUP DATA --

Herd unit 14 , Study no: 24

Type	Quadrat Frequency		Pellet Transect Days Use/Acre (ha)
	'92	'99	
Rabbit	17	19	N/A
Elk	1	-	0
Deer	57	40	70 (173)
Cattle	10	12	26 (64)

BROWSE CHARACTERISTICS --

Herd unit 14 , Study no: 24

A Y G R E	Form Class (No. of Plants)	Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total									
		1	2	3	4		5	6		7	8	9						
Artemisia frigida																		
Y	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	92	3	-	-	4	-	-	-	-	-	7	-	-	-	140	-	-	7
	99	1	1	-	-	-	-	-	-	-	2	-	-	-	40	7	7	2
% Plants Showing		Moderate Use			Heavy Use			Poor Vigor			%Change							
'86		00%			00%			00%										
'92		00%			00%			00%			-57%							
'99		67%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)											'86	0	Dec:	-				
											'92	140		-				
											'99	60		-				
Artemisia tridentata wyomingensis																		
Y	86	-	3	1	-	-	-	-	-	-	4	-	-	-	266			4
	92	2	2	-	-	-	-	-	-	-	4	-	-	-	80			4
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	86	-	-	10	-	-	-	-	-	-	10	-	-	-	666	24	27	10
	92	2	8	4	-	-	-	-	-	-	14	-	-	-	280	-	-	14
	99	-	-	2	-	1	-	-	-	-	3	-	-	-	60	21	29	3
D	86	-	2	17	-	-	-	-	-	-	19	-	-	-	1266			19
	92	10	18	25	-	5	-	-	-	-	40	-	9	9	1160			58
	99	-	-	19	-	2	7	1	-	-	13	-	4	12	580			29
X	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	1320			66
% Plants Showing		Moderate Use			Heavy Use			Poor Vigor			%Change							
'86		15%			85%			00%			-31%							
'92		43%			38%			24%			-58%							
'99		09%			88%			50%										
Total Plants/Acre (excluding Dead & Seedlings)											'86	2198	Dec:	58%				
											'92	1520		76%				
											'99	640		91%				

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Ceratoides lanata																		
S	86	-	2	-	-	-	-	-	-	-	2	-	-	-	133		2	
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
Y	86	-	4	1	-	-	-	-	-	-	5	-	-	-	333		5	
	92	21	-	-	-	-	-	-	-	-	10	-	-	-	420		21	
	99	7	-	-	-	-	-	-	-	-	7	-	-	-	140		7	
M	86	1	6	-	-	-	-	-	-	-	7	-	-	-	466	8	9	
	92	24	3	2	-	-	-	-	-	-	18	-	-	-	580	-	-	
	99	-	-	2	-	1	1	-	-	-	4	-	-	-	80	13	13	
D	86	-	9	5	-	-	-	-	-	-	14	-	-	-	933		14	
	92	1	1	-	-	-	-	-	-	-	2	-	-	-	40		2	
	99	-	-	2	-	1	1	-	-	-	3	-	-	1	80		4	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
		'86			73%			23%			00%			-40%				
		'92			08%			04%			00%			-71%				
		'99			13%			40%			07%							
Total Plants/Acre (excluding Dead & Seedlings)												'86	1732	Dec:	54%			
												'92	1040		4%			
												'99	300		27%			
Chrysothamnus nauseosus albicaulis																		
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	
	92	1	-	-	-	-	-	-	-	-	1	-	-	-	20	-	-	
	99	-	-	1	-	-	-	-	-	-	1	-	-	-	20	14	19	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
		'86			00%			00%			00%							
		'92			00%			00%			00%			+ 0%				
		'99			00%			100%			00%							
Total Plants/Acre (excluding Dead & Seedlings)												'86	0	Dec:	-			
												'92	20		-			
												'99	20		-			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Chrysothamnus viscidiflorus stenophyllus																		
S	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	92	2	-	-	-	-	-	-	-	-	2	-	-	-	40		2	
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
Y	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	92	11	-	-	-	-	-	-	-	-	11	-	-	-	220		11	
	99	3	-	-	-	-	-	-	-	-	3	-	-	-	60		3	
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	92	34	-	-	-	-	-	-	-	-	34	-	-	-	680	-	-	34
	99	32	2	-	-	-	-	-	-	-	34	-	-	-	680	12	21	34
D	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	99	13	-	-	-	-	-	-	-	-	9	-	3	1	260		13	
X	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	20		1	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'86		00%			00%			00%										
'92		00%			00%			00%			+10%							
'99		04%			00%			08%										
Total Plants/Acre (excluding Dead & Seedlings)												'86	0	Dec:	0%			
												'92	900		0%			
												'99	1000		26%			
Opuntia spp.																		
Y	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	92	2	-	-	-	-	-	-	-	-	2	-	-	-	40		2	
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	6	24	0
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'86		00%			00%			00%										
'92		00%			00%			00%										
'99		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'86	0	Dec:	-			
												'92	40		-			
												'99	0		-			
Sclerocactus																		
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	4	6	0
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'86		00%			00%			00%										
'92		00%			00%			00%										
'99		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'86	0	Dec:	-			
												'92	0		-			
												'99	0		-			